

---

(12) UK Patent Application (19) GB (11) 2 061 775 A

---

(21) Application No 8033146

(22) Date of filing  
14 Oct 1980

(30) Priority data

(31) 7909084

(32) 1 Nov 1979

(33) Sweden (SE)

(43) Application published  
20 May 1981

(51) INT CL<sup>3</sup> H02K 5/15  
15/14

(52) Domestic classification  
B3A 44  
H2A BQ

(56) Documents cited

GB 1526731

GB 1296429

GB 1284345

GB 1226243

GB 1150185

GB 1132832

GB 1021097

GB 968871

GB 953311

GB 657924

GB 597054

(58) Field of search

B3A

H2A

(71) Applicant

Aktiebolaget Electrolux  
Luxbacken 1  
S-105 45 Stockholm  
Sweden

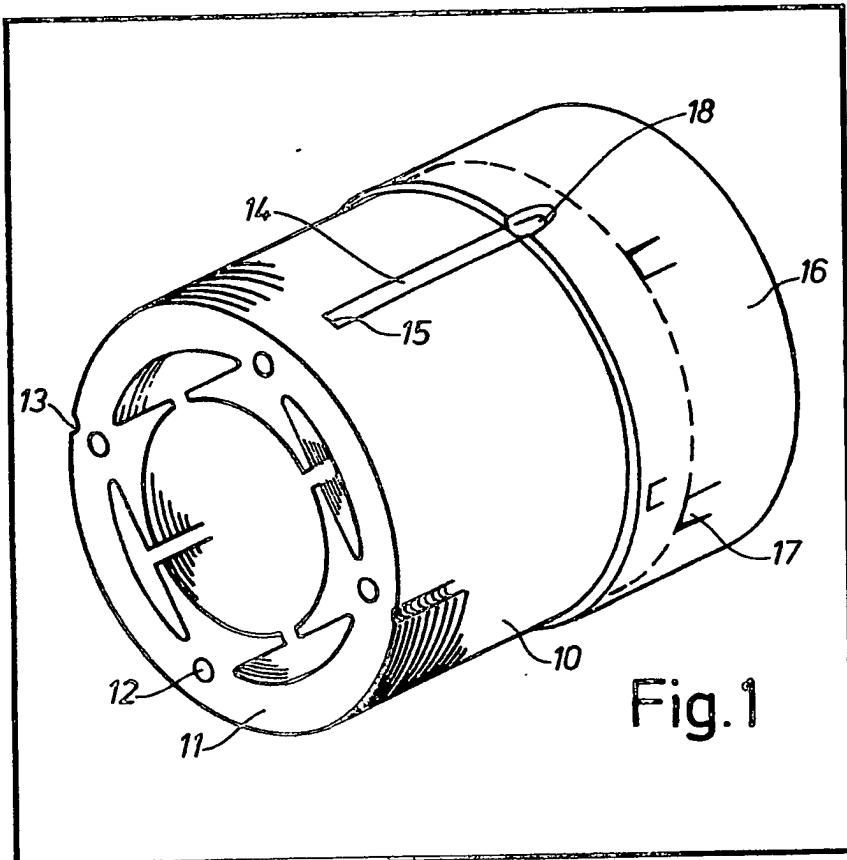
(72) Inventor  
Lars Erik Lundin

(74) Agents  
Withers & Rogers  
4 Dyer's Buildings  
Holborn  
London EC1N 2JT

(54) An electric motor and a  
method of manufacturing an elec-  
tric motor

(57) An electric motor comprises a  
stator (10) and an end cap (16).  
The stator has laminations (11)  
which form a circular outer stator  
surface having at least two diametri-  
cally opposed grooves (14) which  
extend axially. The grooves end at a  
distance from the respective stator  
end so that two radially directed  
abutments (15) are formed. The cap  
(16) is slidingly fitted over the sta-  
tor end to a position in which the  
cap extends a distance over the  
grooves (14). In this relative posi-  
tion of stator and cap a tool is  
applied to depress metal from the  
cap into the grooves and against  
the abutments. To determine the  
distance to which the cap is slid on  
to the stator the cap has inwardly

bent lugs (17) which abut the adja-  
cent stator end surface.



2061775

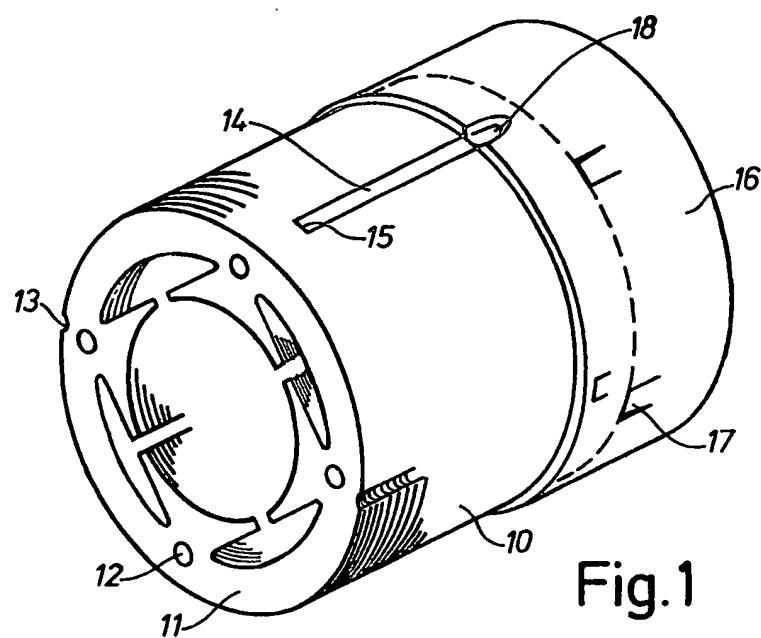


Fig. 1

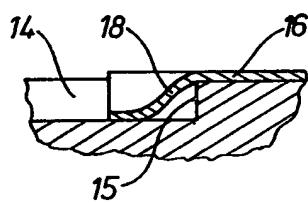


Fig. 2

**SPECIFICATION****An electric motor and a method of manufacturing an electric motor**

5 This invention relates to an electric motor which comprises a stator having a circular outer contour and at least one end cap slidably fitted over and fixed to the outer contour

10 of the stator. The invention also relates to a method of manufacturing such a motor.

The common way of joining an end cap to a stator is to make portions of the end cap abut an end surface of the stator and to secure the

15 stator to the end cap by axially extending screws with nuts.

An object of the invention is to provide a motor and a method of manufacturing it in which neither screws nor nuts are required for

20 holding stator and end caps together. Another object is to reduce the number of working steps for assembling stator and end caps and preferably to eliminate them.

According to this invention an electric motor

25 comprises a stator having a substantially circular outer surface and at least one end cap slidably fitted over and fixed to the outer surface which has at least two axially extending grooves which, at a distance from the

30 stator ends, form abutments, the or each cap having a number of grooves, and each portion being depressed into the relevant groove against the abutment to secure the cap or caps against axial and peripheral movement

35 on the stator.

Also according to this invention a method of manufacturing an electric motor comprises:— providing in the outer surface of the stator at least two axially extending grooves

40 which, at a distance from the stator ends, form abutments; sliding an end cap over one stator end past the abutments; and depressing portions of the end cap into the relevant grooves against the abutments so as to fix the

45 end cap to the stator.

An embodiment of the invention will now be described by way of example, with reference to the drawing, in which:—

Figure 1 is a perspective view of a motor;

50 and

Figure 2 is a detail cross section.

Referring to the drawing, a stator 10 having a circular outer contour is formed by a plurality of stator laminations 11 secured to one another by through rivets 12. Each lamination has two diametrically opposed slots 13 which are aligned so as to form grooves 14. Those laminations which are situated more than approximately 10 mm from the respective stator end are turned through 90° relative to the other laminations, as seen in Fig. 1. In this way radially extending edges 15 (see also Fig. 2) are formed in the grooves 14 for securing an end cap 16.

65 To assemble an end cap 16 and the stator

10 the cap is slidingly fitted over the stator end and over grooves 14 a distance which can be determined in a simple way by guide members. In Fig. 1 the latter are in the form

70 of lugs 17 punched from the cap, which is of sheet metal, and bent inwardly. The lugs are equally spaced about the periphery of the cap and abut the stator end surface when the cap is mounted on the stator. When the cap is in

75 this position a tool is applied which depresses portions 18 of the cap into the grooves 14 and against the edges 15, as shown. These depressions are made simultaneously into all the grooves 14.

80 As will be understood, the necessary preparation of the stator laminations will have already been made during their manufacture, and no subsequent adjustment of the stator structure is required for assembling the motor.

85 Since metal from the cap is depressed in one operation into the relevant grooves and against the radial edges to form a joint, no preparatory treatment of the cap is necessary either.

90

**CLAIMS**

1. An electric motor comprising a stator having a substantially circular outer surface and at least one end cap slidably fitted over
- 95 and fixed to the outer surface which has at least two axially extending grooves which, at a distance from the stator ends, form abutments, the or each cap having a number of portions corresponding to the number of grooves, and each portion being depressed into the relevant groove against the abutment to secure the cap or caps against axial and peripheral movement on the stator.
2. A motor according to claim 1, wherein
- 105 the stator comprises a plurality of laminations each with at least two diametrically opposed slots which form the grooves, the laminations adjacent each stator end being turned through a given angle to form radially directed edges
- 110 which constitute the abutments.
3. A motor according to claim 2, wherein the said laminations are turned through an angle of 90°.
4. A motor according to claim 2 or claim
- 115 3, wherein four grooves are arranged in pairs, the pairs of grooves forming an angle relative to one another which is less than 90°.
5. A motor according to any preceding claim, wherein the or each end cap has projections abutting the adjacent stator end.
- 120 6. A motor according to claim 5, wherein the projections are inwardly bent lugs punched from the cap.
7. A method of manufacturing an electric
- 125 motor comprising a stator having a substantially circular outer surface and at least one end cap slidably fitted over and fixed to the outer surface, the method comprising:—
- providing in the outer surface of the stator
- 130 at least two axially extending grooves which,

at a distance from the stator ends, form abutments;  
sliding an end cap over one stator end past the abutments; and

5 5 depressing portions of the end cap into the relevant grooves against the abutments so as to fix the end cap to the stator.

8. A method according to claim 7,  
wherein the stator comprises a plurality of

10 10 stator laminations, the method further comprising:—  
punching from the stator laminations two diametrically opposed slots;  
arranging the laminations so that the slots

15 15 coincide to form two diametrically opposed grooves;  
at each stator end turning laminations adjacent each end through a given angle to form abutments in the form of radially directed

20 20 edges in the grooves;  
sliding an end cap over one stator end past the radial edges; and  
depressing portions of the end cap into the relevant grooves against the radial edges.

25 25 9. A method according to claim 8, comprising turning the said laminations adjacent each end through 90° relative to the other laminations.

10. A method according to any of claims

30 30 7 to 9, comprising punching out lugs in an end cap and bending the lugs inwardly to abut the adjacent stator end.

11. An electric motor constructed and arranged substantially as herein described and

35 35 shown in the drawing.

12. A method of making an electric motor substantially as herein described, with reference to the drawing.

Printed for Her Majesty's Stationery Office  
by Burgess & Son (Abingdon) Ltd.—1981.  
Published at The Patent Office, 25 Southampton Buildings,  
London, WC2A 1AY, from which copies may be obtained.